

## ABSTRACT OF THE DISCLOSURE

A lightweight, high strength carbon aerogel composite and method of producing such a composite. An organic gel precursor is infiltrated into a pre-formed organic polymer foam or fiber-mat where it gels. The gel composite is then dried by any method that limits the shrinkage of the composite material. The dried gel is then heated in a furnace to pyrolyze the composite, reducing it to a glassy carbon form. The structure of the final carbon product consists of a matrix of porous carbon aerogel, reinforced by solid carbon struts, or fibers all in intimate contact, so that the strength of the composite is maximized.